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THE PROBABLE EFFECT OF THE OPENING OF
THE PANAMA CANAL ON OUR ECONOMIC
RELATIONS WITH THE PEOPLE OF THE
WEST COAST OF SOUTH AMERICA

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With the actual opening of the Panama Canal so near at hand, it may seem to some that the consideration of this subject had better be postponed for a decade or so until the actual effect rather than the probable effect can be the topic for discussion. To such minds the proper time for considering this subject has long since passed. It might have been worth discussing when the question as to the advisability of our digging the canal was in the air, but at present, they say, it is simply a waste of time.

To this it may be replied that the American people dug the Panama Canal for military expediency and because it suited them to do so, chiefly to knit our own country closer together, and without regard to its good or bad effects on the west coast of South America. Consequently there was no particular object in discussing this subject in connection with the advisability of digging the canal. Furthermore, while there is no question that a study of the actual effect of the canal on the west coast will prove to be both interesting and instructive if undertaken during the course of the next decade, there are also good reasons why it is expedient to consider this subject now, even while we are on the threshold of the new era.

The chief of these reasons is the keen optimism which prevails in some circles in the United States and to a greater extent on the West Coast, that the opening of the canal is going to usher in an era of great prosperity; is in fact, going to effect a veritable economic revolution. If this is true, we must prepare for it; if not, we must be on our guard against it. In either case the very existence of this optimism is a sufficient cause

for the most careful consideration of the possibilities. Forewarned is forearmed. No man starteth to build a house without counting the cost thereof, lest when his work is but half completed he find that he cannot continue, and his half-built edifice remaineth as evidence of his folly. In other words, it is the policy of wisdom both for us and for South America to look ahead as far and as carefully as possible.

Now that we have mentioned this optimism, it may as well be admitted in the beginning that the probable effects due to this very optimism are among the most difficult things which we have to estimate. Psychology is, I suppose, a science, although some people still classify it under philosophy, and regard it as extremely empirical. The day may come when the masters of psychology will be able to give us as accurate a prediction regarding the probable force of any given set of beliefs or opinions as the economic geologists give today in regard to the probable value of any given mineral deposit. No one denies that geology is a science, even though we all know that the reports of economic geologists with regard to the probable success of a mine are not always infallible!

But at present, psychologists have not got to that point where they can even approximate the positive effects of widely disseminated beliefs. Consequently, it is extremely difficult, if not absolutely impossible, to say to how great an extent the psychological side of the opening of the Panama Canal is going to affect our trade with the west coast and our relations with the people of Ecuador, Peru and Chile. Yet this part of the problem cannot be lightly dismissed, for it appears to be one of considerable magnitude.

Nearly every intelligent Peruvian and Ecuadorian with whom one talks believes firmly and enthusiastically that, with the opening of the Panama Canal, his country is going to start out on an era of great commercial prosperity. To his sensitive and imaginative mind, the defenses to a rich and great city are about to be pierced. The opening of the waterway is to him the unlocking of the gates permitting him to enter and enjoy the results of a long and arduous siege. With the inrush of the waters into the canal will come an inrush of

capital, immigration and trade, which will raise his country out of its present despondent condition and place it in the forefront of the world's progress. Veritably it is a miracle which is about to happen.

The Chilian is somewhat less optimistic. He is sure the the canal will benefit Chile, but just how much is another question. He is keenly conscious of the fact that heretofore Chile has been nearer Europe on the ocean waterway than any other west coast country, while the opening of the canal will reverse this position and make Chile the farthest away. At the same time, the Chilian is doing what he can to take advantage of any new opportunities by actively building new docks and new railroads. A large section of the longitudinal railway which parallels the coast has recently been completed, and plans are already being considered for large extensions. By reason of its wealth of nitrates Chile is prosperous. Export duties on this valuable product give her an abundant revenue. Her climate is more temperate; what agricultural land she has is more available. The Indian stock in the south of Chile is more vigorous than that of her northern neighbors.

Owing to adverse economic conditions the ardent optimism of the Peruvians and Ecuadorians has not enabled them to do as much as they would like in preparation for the opening of the canal. Furthermore, there is the well-known tendency which prevails in so many tropical countries of believing that things are going to happen without actually doing very much to make them happen. Consequently, much as I feel that the west coast people are going to be disappointed in the extent of the prosperity which is about to come to their shores, I have not found any evidence to show that this disappointment, if it comes, will mean great financial loss, accompanied by the hardships incident to the collapse of a boom, unless this boom is engineered by outside capital. Even in that case, the hardest blow will fall on the investor, and there are relatively few capitalists on the west coast.

The psychologic effect on the minds and actions of the business men of the United States is far more difficult to estimate,

and is likely to be followed by graver consequences. If a considerable number of American manufacturers and capitalists get carried away with the idea that the opening of the Panama Canal means a great boom on the west coast of South America, if they believe that the completion of that waterway is of equal significance with the completion of the first transcontinental railway across the United States, or with one of the great industrial discoveries such as the practical application of steam to navigation or the replacement of iron for wood in the construction of ocean vessels, if they catch any part of the tremendous optimism and enthusiasm of the average Peruvian, for instance, something very serious is going to happen. American energy and initiative, backed by American capital, will be directed to new projects, and enterprises involving great risks will be undertaken.

It is possible to conceive of a great increase in our trade with the west coast of South America, due solely to the fact that American manufacturers believe that the opening of the canal has opened to them a new market, and made it possible for them to secure trade in regions where they have supposed this was heretofore impossible. It is entirely within the bounds of possibility that American capitalists, looking for larger returns on their investments, and believing that the opening of the Panama Canal is equivalent to opening the doors of tremendous opportunity on the west coast, will place large sums of money in enterprises which they would not otherwise have thought of considering.

We have no means of estimating precisely the extent of this optimism in this country. It varies in different sections and varies largely with the temperament of the people with whom one talks. If we could only tell exactly the force of it, we should be able to predict with reasonable accuracy the size of the approaching boom.

Before any such boom gets started it behooves us to observe as accurately as possible the foundation on which it will have to rest. If the economic and geographical foundations exist for such an extension of trade and capital as would follow any such optimism on our part as exists on the west coast, then the future has indeed in store for us many won-

derfully attractive features. If on the other hand, sufficiently broad bases do not exist for the building up of such an edifice as we have just contemplated, a crash is bound to follow, and a crash that will cause suffering both here and abroad in direct proportion to the superlative or unwarranted enthusiasm which has been aroused by the psychology of the opening of the canal.

In other words, if our examination shows this foundation to be broad, solid and stationary, the sooner the average American business man makes up his mind to join in the movement the greater will be his gain. If, on the other hand, we come to the conviction that the foundations are narrow and uncertain, the more cautious the American manufacturer and capitalist are, the less they will lose in time and money, and the less the west coast will lose in reputation and good prospects.

The probable effects of the opening of the Canal on our relations to the west coast depend, therefore, not only on the amount of enthusiasm that is aroused in the United States, and on the west coast; but also, in the long run, on the actual economic and geographical conditions on that coast. Having considered the psychological side, let us now turn to the geographical and ethnological.

In the first place let me ask you to look at a physiographic map of South America. The first thing that will strike your attention is that the great highlands of South America run continuously up and down the west coast within a few miles of the seaboard. On the east coast are a number of high mountains, but on the west coast there is a long section which you will see is over 16,000 feet above sea level, and a still longer section which continues for thousands of miles without a break at an elevation of over 10,000 feet.

It looks as though nature had built a bulwark, an enormous Chinese wall, to protect South America from approach on the west. This enormous mountain barrier makes the little Gateway at Panama seem very futile so far as the great bulk of the South American continent is concerned. Here is a barrier several thousand miles long, and varying in height from 8000 to 20,000 feet. Scarcely ever is it less than 10,000

feet above sea level. It is not fair to say that the opening of the Canal will not affect the height of this mountain wall, for anything which cheapens transportation makes it easier to bring in the steel rails and locomotives which can climb the Andes and reach the central and eastern parts of South America. At the same time, it must not be forgotten that, owing to the lack of any such barrier on the east coast, and owing to the existence there of navigable rivers like the Amazon, the Madeira, and the Rio de la Plata, the valuable central and eastern plains of South America are much more accessible from the Atlantic than they will ever be from the Pacific coast.

Speaking of rivers you will observe that there are no navigable rivers on the west coast. Speaking of plains, it is perfectly evident that the great plains where agriculture and animal industries can be carried on to any great extent, are not on the west coast, but on the east, and are tapped by navigable rivers in a country where railroads can be built easily and cheaply, instead of with the maximum both of difficulty and expense as on the west coast.

If the day ever comes when aeroplanes are relatively as safe and as cheap as bicycles, then life in the Andes will see a great revolution. But the opening of the Panama Canal has relatively little to do with the maintenance cost of Andean transportation. Even those railroads which are already in existence and are in the best locations for securing trade and building up local industries, find it excessively difficult to pay expenses. Eliminate all the differences in cost of building these railroads between what they actually cost and what it would cost to construct them after the opening of the Panama Canal, and even on that basis of capitalization, they could only with the greatest difficulty pay a very moderate interest on the investment.

When one looks at the physical character of South America, it is easy to understand why this is so. Before a railroad can get more than 100 miles into the interior, it must climb up into the sky, two or three miles. Take for instance the Oroya Railroad which runs from Lima, the capital of Peru, into its richest mining district. In the first 75 miles it has to

climb up over 15,000 feet. This means enormous expense of maintenance. Even if the railroad ran through a rich and rapidly developing country, it would have serious financial problems to face. As it is, its difficulties are almost insuperable. And when one gets up on top of the plateau, what then? Life at great altitudes is anything but pleasant. The possibilities are extremely limited. There are mines and there are great mineral deposits. Some parts of them have been exploited by wealthy and enthusiastic capitalists; very few have paid dividends. It is a grave question whether the opening of the Panama Canal will aid much to alter the conditions of transportation, the difficulties of securing labor, and the unpleasantness of conducting mines at an elevation of over 13,000 feet above sea level.

There is no place in the world where transportation problems are more difficult than on the west coast of South America. The rails in southern Peru have to cross a pass at an elevation of 14,666 feet above sea level. The new railroad in northern Chile has a pass nearly 14,000 feet high, and the next railroad that crosses the Andes to the great silver mines and tin deposits of southern Bolivia crosses at an elevation of 14,500 feet. The transcontinental line goes through a tunnel at an elevation of over 10,000 feet. This great mountain chain of the Andes, translated into terms of economic efficiency, means enormous costs of transportation, terrific difficulties in building railroads, canyons from 4000 to 10,000 feet deep separating sparsely populated mountain uplands, where it is not easy to believe that there is enough economic basis for the construction of the extremely costly railroads which would have to be built to connect them.

We have heard from some of our friends in Washington that the opening of the Panama Canal is going to open a tremendous opportunity to commerce and trade in this country on the west coast of South America. I am quite willing to admit that if the geographical conditions were turned about, the opening of the Panama Canal would indeed be the means of a vast opportunity in South America for the commerce and trade of this country.

Just imagine for a moment what the opening of the Pan-

ama Canal would mean if the east coast of South America were fringed by a mountain barrier 10,000 feet high and the west coast had navigable rivers and enormous plains. It almost paralyzes the imagination to attempt to estimate the enormous development which would speedily follow the shortening of distances. Instead of this being the case, the reverse is true, and the great bulk of South America will not be one day nearer than it ever has been, and the worst of it is that this bulk is not only larger in area, but far more important economically. The possibilities for the future development of Brazil and Argentina are so great that it is impossible to estimate them, but such remarks, unfortunately, cannot apply to the west coast where the hand of Nature has not been any too kind.

Not only did nature build a stone wall to shut off the west coast from participating in the normal development of the South American continent, but she proceeded to build a desert wall as well. There are more than 2000 miles of the west coast that do not get more than 10 inches of rain a year. Here, again, it would seem as though nature had given an extraordinarily heavy handicap to the Pacific side of South America.

Not content with raising a huge mountain barrier, she has put in a barrier of desert for nearly 2000 miles, and as though adding insult to injury, at the two extremities of the west coast, where the desert does not exist, Nature goes to the other extreme and gives too much rain. As a result, the western edge of the Republic of Colombia is a dense tropical jungle, fever stricken and extremely unhealthy. The southern coast of Chile, where there is abundant rain, is in a cold region, very much like Norway. The temperate latitudes are largely desert. Incidentally, one observes by looking at a rainfall map of South America that those regions which are properly watered, having between 40 and 80 inches a year, are almost entirely in Argentina, Uruguay, Paraguay, Brazil, and Venezuela. In other words, the east coast, besides having the advantage in navigable streams and plains, has a great advantage in rainfall. There seems to be very little comfort for those who are looking for a geographically solid

basis for the economic development of the west coast, even after the Panama Canal is opened. In the North we have tropical jungles and in the south cold araucaria. The central portion is desert and a great deal of it is Alpine.

It may be interesting to note in passing that the causes of this curious distribution of rainfall are threefold: the height of the Andes, the direction of the Humboldt current, and the direction of the prevailing winds across the continent of South America. These winds coming from the Atlantic, laden with moisture, cause great rainfall in the Amazon Valley and on the eastern side of the mountains, and leave no moisture to be precipitated on the west coast. The Humboldt current, cooling the entire coast as far north as Ecuador, causes some mist and rain to be deposited at sea and along the fringing foothills during some part of the year, but prevents the sunburned coastal strip from securing even that little rain that it might expect in occasional westerlies. One of the surprising things some people find when they go down the west coast is that the water is too cold to permit them the luxury of tropical sea baths, as in Hawaii.

In view of all this, conditions are most undesirable for anything like ranching or agriculture on the west coast, whereas on the east coast, Nature, in addition to giving them extremely fertile plains and a fine agricultural country, has given them the best rainfall that one could wish for, for the purposes of agriculture and animal industries.

Now, keeping clearly in mind the actual geographical handicaps of the west coast, the long desert on the seaboard, the high dry plateau back of it, and the lofty chain of mountains rendering transportation extremely difficult and excessively expensive, let us attempt to estimate just what economic basis the future development of the west coast has to depend upon.

First and foremost comes mineral wealth. If there is enough mineral wealth it can overcome untold difficulties of transportation. It does not need rainfall or vegetation; it merely requires a market. Mineral wealth is the strong point of the west coast. The very aridity of the northern Chilean desert is the cause of Chile's great wealth of nitrates. The

exploitation of the nitrate fields by English and other foreign capitalists, and by the Chilean capitalists themselves, has gone on apace during the past twenty-five years. The necessary railroads and port works have been constructed, labor has been introduced, and refining plants have been built. The only clouds on the horizon, are, first, the fact that there must be a definite limit to the amount of nitrate which can be profitably extracted, and, second, the recent successful extraction, in Norway, of nitrates from the nitrogen in the atmosphere.

The length of the ocean voyage from the nitrate fields to the agricultural fields of Germany, one of the best customers for Chilean nitrates, will be shortened about 3000 miles by the opening of the Canal. This will cheapen the cost of nitrate in Germany and thereby benefit the European farmer, *if*, as seems likely, the canal tolls do not offset this to a great extent. Similarly, it ought to cheapen the cost of fertilizers to our western farmers, who will undoubtedly import nitrate through the port of New Orleans. Eventually, it seems as though this might be of great benefit to agriculture in the United States, and, by increasing the demand, of considerable benefit to the Chileans. The outlook here is decidedly promising. The question as to the limits of production of the somewhat restricted Chilean nitrate field need not concern us here at this time, for there seems to be plenty of nitrate for at least fifty or one hundred years to come.

Unquestionably, the agriculturists of the Mississippi Valley ought to be prepared to take advantage of the cheapening of the cost of nitrates which must follow the opening of the Canal. It is common knowledge that we in this country lag far behind Europe in our knowledge of intensive cultivation and scientific agriculture. With our broad and fertile prairies, we have not had to practice such careful husbandry as the European farmers. This is one of the causes of the high cost of living. There is no doubt that the time is coming when we shall learn the advantage of making our soil produce as much as it possibly can.

The sugar planters of Louisiana, who believe that they face ruin in the prospect of free sugar, have yet to test the

result of using Chilian nitrates. It may be that with the cheapening of this product in the port of New Orleans, it will be possible for the Louisiana planter so to increase the yield of his fields that he will be better off than in the old days of protected sugar. It is well known that the most profitable sugar plantations on the Hawaiian Islands have long used scientifically made fertilizers in keeping the production of their sugar-cane fields up to the maximum. Even in my boyhood I remember sailing-vessels coming to Honolulu laden with Chilian nitrates.

Cargoes, like nitrates, which bulk large and have relatively small value, cannot pay heavy transportation charges. It certainly would not have paid to have carried them across the Isthmus of Panama by rail for the sake of getting them quickly to New Orleans. A tramp steamer, with a load of Chilian nitrate, bound for Iquique to New Orleans, will find its journey shortened by 6000 miles, saving 50 cents to \$1 per ton. Here in this nitrate business is something definite and tangible, a solid basis for future growth, and a cause of increased prosperity both to Chile and to the Mississippi Valley, if not also to the states of the Atlantic seaboard.

The guano of the Peruvian islands comes under the same head. The chief difficulty here is that, owing to the very limited quantity of this product and the need for it in Peruvian agriculture, it does not seem likely to prove a large factor in the future development. Only recently an executive order has stopped the collection of guano on those islands from which the Peruvian Corporation secured their most valuable product and one of the chief sources of their none-too-large profits.

Next to nitrates, probably comes copper. The world-wide increase in the use of electricity seems to be creating a steadily increasing market for this metal. There are enormous copper deposits in Peru and Chile. Probably the best known in this country are the mines of Cerro de Pasco and of the Braden Copper Company. Stories of extraordinary new finds are continually coming in; contradictory reports concerning the future development of very extensive projects, one of them necessitating the building of a \$5,000,000 rail-

way in order to connect one of these copper deposits with the seacoast, are current in the South American journals. With the shortened water transportation, undoubtedly an increased amount of copper will be brought from the west coast to the United States. As long as copper is as valuable as it is at present, about \$330 a ton, it is worth while to pay the high charges of the Panama Railroad. Whether the increased output of copper, which will be encouraged by the greater ease of transport, will seriously affect the price in this country is a matter of dispute. On the other hand, there is no doubt that the money spent in west coast mines for wages will increase the purchasing power of the people of the west coast.

Next to copper in importance from the mineral standpoint comes the tin of Bolivia, which must find its outlet either through the ports of the west coast or by the railways of Argentina. It was the original intention of both the Argentine and Bolivian governments to build a railway south from Potosí, so that this most important tin-producing region would find its outlet on the Rio de Plata rather than on the Pacific Ocean. But the actual railroad which has been constructed from Oruro to Potosí makes it more probable that this tin will come out by way of Antofagasta. Here again is the basis for increased prosperity in Bolivia and for cheaper tin for American manufacturers. Whether it will work out that way or not remains to be seen.

With regard to the more precious metals, such as gold, silver, and vanadium, they are of such great value in proportion to their bulk that it is doubtful whether the opening of the Panama Canal will seriously affect their production, even though it will make it a little cheaper for mines to secure heavy machinery. The chief cost of transporting this machinery in the past, however, has not been the long ocean voyage, but the difficulty of getting it ashore on a coast where good ports are extremely scarce, and the enormous cost of transporting it over the mountains to the mines where it is needed.

I remember visiting a well-known gold mine in southern Peru in 1911, where a quartz-crushing plant was being in-

stalled. We were informed by the manager that the cost of bringing some of the pieces of the machinery over the two days of pack-mule trail was almost equal to the value of the mules. In other words, the mule contractor found that after a mule had made one journey with such a heavy piece of machinery it was good for nothing thereafter. It seems to me highly problematical whether the cheapening of ocean freights will cause any great increase in the amount of railway building, and after all the greatest barrier in the way of developing a mountainous mineral region is the cost of transportation and the maintenance of roads.

Finally, there is the question of petroleum. Within the past few years profitable oil wells have been developed on the coast of northern Peru. Recently word has come of the intention of British capitalists to invest a large amount of money in exploiting oil fields in Ecuador and Colombia. The opening of the Canal will enable the west coast oil to find a nearer market.

The minute one leaves the question of mineral resources and begins to take up the question of agriculture, it can readily be imagined that this is a subject which has very decided limitations. To be sure, there are considerable areas in Peru, at present desert, which might be irrigated. Last winter when I was in Lima I was told that there were two representatives of foreign capitalists then in Lima, attempting to secure concessions which would make it worth while to invest from \$5,000,000 to \$10,000,000 in irrigation enterprises. Considered with their relative bearing on the great question of any extraordinary era of commercial prosperity, such enterprises would only be interesting as straws to show which way the wind was blowing. The fact remains that the capital was willing to come if it could get reasonably favorable consideration. I do not speak from personal knowledge, but I have been told on what I believe to be good authority, that both enterprises fell through because of local conditions which would not be affected by the opening of the Panama Canal.

It is easy for the enthusiastic Latin-American to let his imagination get the best of him and to overestimate the

value of the great natural resources of his country. It is difficult for him to realize the enormous human handicaps that exist between the consummation of his wishes and actual conditions. He is not to be blamed for this; it is, on the contrary, a praiseworthy quality. People inhabiting a region where Nature has placed great obstacles in the way of human progress must necessarily be optimistic or they will be crushed by pessimism. At the same time, it behooves the investigator to take careful account of this optimism, which, by raising too many artificial obstacles, frequently gets in the way of the investment of capital. Not only optimism, but pride of race, and justifiable self-respect, frequently obstruct the course of those who would secure profitable concessions.

It is true that a certain amount of sugar and cotton can be raised on the Peruvian coast. The land available for such purposes is not unlimited and there are, furthermore, serious handicaps in the way of great progress along these lines. Both water and labor are scarce. At the same time, and within certain definite restrictions, the amount of machinery which could profitably be sold to sugar and cotton planters in Peru is undoubtedly capable of increase. Cheaper freights, more speedy delivery, and lack of the necessity of transshipment at Panama ought to benefit both the Peruvian planters and American manufacturers of machinery. To how great an extent this benefit is capable of enlargement, time alone can tell. Those who are interested will have to make a special study of this subject.

From this review of economic resources it is readily seen that while the future of the west coast has nothing in store at all comparable in extent to the future of the east coast, there are great possibilities from the tremendous deposits of copper, nitrates, and tin, and the possible extent of oil fields. The development of these mineral industries means the necessity of building railroads. The influx of capital which must follow this will slowly increase the purchasing power of the people, and thereby increase the demand for American manufactured products.

This now brings us to the second aspect of our problem, namely, the ethnographic or racial side. Who are the people

that form the great bulk of the market of the west coast? The majority of them are non-Spanish-speaking Indians. The people whom you meet in the cities, as you travel up and down the coast, are, most of them, Spanish-speaking descendants of the early Spanish conquerors and former Spanish colonists. But when you get in to the back country you find hundreds of thousands of civilized Indians who do not use the Spanish language. These people are extremely conservative. They have very few wants, and they do not form an active purchasing class. Their wants have got to be carefully studied by the American exporter, and in particular the wants which they are going to develop during the next generation. Ecuador, Peru, and Bolivia are governed by Spanish-speaking people, and if you visit the cities of Guayaquil, Lima, Valparaiso, and Iquique, or even interior cities like Arequipa and Santiago, the people whom you meet, and most of the people whom you see, speak Spanish. But the great mass of the population of the Andes, both north and south, is still primitive Indian, speaking Quichua and Aymará.

The Indian problem is a very serious thing; it is in fact the most serious thing that confronts the governments of Peru and Bolivia today. In eastern Peru the rich man, the well-to-do man, the man of culture and refinement, almost without exception gets his money from land on which he has planted either coca, the source of cocaine, or sugar cane, from which he gets sugar to a certain extent, but to a far larger extent aguardiente or "fire-water."

The cost of transporting coca leaves or "fire-water" bears some fair proportion to the value of the product in a land of mule transportation. Consequently it pays to raise and develop these crops, but unfortunately it results in an entire economic system based on the production and consumption of two deleterious things, cocaine and fire-water, and the chief consumers are the Indian laborers, the majority of the people of the Andes, whose efficiency is thereby steadily diminished. It is a vicious circle and one of the greatest problems that confronts those countries. Personally, it seems to me possible to establish in these interior valleys planta-

tions of cotton, and to utilize the tremendous resources of power from the streams, and so to build up a circle which will provide to the Indians something besides two things that damage them and take away all ambition and progress.

Furthermore, as I have previously said, the Indians are extremely conservative; their habits are very difficult to change. You may show them the best form of the most efficient spade to work with—they prefer the old kind. You may provide them with steel plows, but unless you make them use them, they will continue to use the pointed stick. Consequently, there is a difficult problem to meet there, an ethnological problem that demands earnest attention and first-hand study. The Indians are not ready for a boom.

Finally, let me recapitulate:

Keen optimism prevails in some circles in the United States and, to a greater extent, on the west coast, as to the probable results of the opening of the Panama Canal. Many people believe that a veritable economic revolution is going to set in and that the west coast is on the verge of an era of great prosperity.

It is difficult to estimate exactly the psychological results of the opening of the Panama Canal. At the same time, there is no question that the great optimism which prevails will cause many business ventures to be undertaken. Some of these might well be done now, but actually they will not be begun until after the opening of the Panama Canal, because many business men firmly believe that the opening of the Canal means the opening of very great opportunities. The inhabitants of the west coast are likely to be disappointed in the extent of the prosperity which is about to come to their shores. At the same time, their ardent optimism is likely to arouse them to greater economic efforts. The psychologic effect on the business men of the United States is likely to lead them to believe that the opening of the Canal will open to them a new market and will make it possible for them to secure trade in regions heretofore inaccessible. If the economic and geographic foundations exist for such an extension of trade as will follow great optimism on our part, then the future has in store for us many wonderfully attractive fea-

tures. If, on the other hand, sufficient broad bases do not exist, a crash is bound to follow unless we have foreseen the danger and avoided going further than we are warranted in doing.

The geographic bases of the future expansion of the west coast may best be seen by a careful examination of the physiographic, rainfall, and vegetation maps of South America. These show that the west coast is a narrow strip bounded by lofty mountains and the ocean; that the larger part is not provided with adequate rainfall, but is really a desert; and that there are no navigable rivers on the west coast. The great well-watered plains, the navigable rivers, the enormous stretches of agricultural and ranch land, are east of the wall of the Andes. It almost paralyzes the imagination to attempt to estimate the enormous development which would speedily follow the opening of the Panama Canal if the geographical conditions of South America were reversed. The tremendous shortening of distances which is going to take place so far as ocean transportation is concerned, will not bring the great bulk of South America one day nearer than it ever has been. The great future for American commerce and investment lies in Argentina and Brazil. This is not saying that there are no opportunities on the west coast, but those opportunities are chiefly connected with the development of oil fields and of mines of copper, tin, and nitrate, and the building of railroads in connection with the development of mineral industries.

The opening of the Panama Canal will enable the west coast of South America to secure necessary machinery and railroad equipment somewhat more cheaply, but probably the saving will not amount to more than \$1 per ton. The greatest benefit so far as the United States is concerned, will be in the ability of the Mississippi Valley states to secure cheaper fertilizer from the nitrate fields of Chile and to secure a nearer market for their own manufactured products. The greatest benefit which the west coast will receive will be in lessening the time it takes her copper, tin, and nitrates to reach Europe and America, and her machinery and manufactured articles to arrive. The saving on shipments which

have heretofore gone by the Panama Railroad will be considerable, but the actual saving in cost on each shipment which has heretofore gone in tramp steamers from New York through the Straights of Magellan will not be very great after the Panama Canal tolls have been paid. It is possible that this saving may not amount in many cases to as little as 50 cents per ton.

The more cautious the American manufacturer and capitalist is, the less will he lose in time and money, and the less the west coast will lose in reputation and good prospects. At the same time, it is undoubtedly true that, Panama Canal or no Panama Canal, the west coast of South America offers many opportunities to American manufacturers and capitalists which are not being taken advantage of today, but which are likely to be taken advantage of in the future after we get people acquainted with the west coast. The running of through first-class passenger steamers from New York to Peru and Chile by the Panama Canal will undoubtedly enormously increase travel to those countries. The intimate knowledge thus gained will lead to an extension of trade and investment. With the lack of delays caused by congestion of shipping at the Isthmus of the west coast, merchants will be encouraged to increase their purchases, since they will be able to count on the date of delivery with far greater exactitude than at present.

In conclusion, I cannot urge too strongly the necessity for first-hand investigation of the field. The economic condition of each west coast country should be studied from the point of view of the different manufacturers who are interested in promoting their foreign commerce. Millions of pounds sterling have been invested in South America by British capitalists, without their having secured adequate return, because they formerly rushed in without securing first hand knowledge of the particular fields in question. It is not to our interest nor to the interest of the west coast countries, to have an inflated boom followed by disastrous conclusions. At the same time there is no question that the American manufacturer is not taking full advantage of the opportunities offered him by the actual and steady economic de-

velopment of the west coast. He has not, as a rule, made a careful study of things, and of the problematical purchasing power of the millions of Indians, inhabiting the highlands of Colombia, Ecuador, Peru and Bolivia. German manufacturers are far ahead of him in this particular thing, owing to the far greater number of German wholesale merchants in the mountain cities and towns.

While it is true that the opportunity for enormous development is far greater in the highlands of Brazil and on the plains of Argentina than in the rocky fastnesses of Chile and Peru, the fact remains that there are great mineral deposits awaiting development, and awaiting such a careful study of the conditions incident to their development as will overcome the obstacles placed there by Nature, and make possible the extraction of these minerals economically and profitably. The opening of the Panama Canal will allow cargoes of ore to be brought to the United States more cheaply than before. This will stimulate activity at the mines and improve the economic status of the laborer, and consequently increase the demand for manufactured products which could be exported from this country.

Finally, if the American manufacturer and exporter will secure first-hand information in regard to the peculiar conditions of the various countries, and will not expect more than Nature gives him a right to expect, he can take a part in the development and up-building of the economic future of the west coast, which will bring profit to himself, credit to his country, and prosperity to the west coast. Such a result would be a most desirable effect of the opening of the Panama Canal on our relations with the people of South America.